	Application No.	Applicant(s)
Notice of Allowability	10/646,062	KIM ET AL.
	Examiner	Art Unit	
	Hong Cho	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-6 and 8-11 (renumbered 1-10)*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some*   c) ☐ None   of the:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

EXAMINER'S AMENDMENT

1.　　An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37

CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no

later than the payment of the issue fee.

　　　　　Authorization for this examiner's amendment was given in a telephone interview

with Eric Hyman on 05/08/2007.

　　　　　The application has been amended as shown in the Attachment A.

Reasons for Allowance

2.　　Claims 1-6 and 8-11 are allowed.

3.　　The following is an examiner's statement of reasons for allowance:

　　　　　Claim 1 is allowable over the prior art of record since the cited reference taken

individually or in combination fails to particularly disclose an apparatus for processing

protocol layers of an Ethernet passive optical network (PON), the apparatus comprising:

an Emulation sublayer processing unit which performs cyclic redundancy check (CRC)

on information included in a preamble of an Ethernet data frame transferred from a

physical layer processing unit, and extracts LLIDs from the preamble, a MAC sublayer

processing unit, which has one MAC address corresponding to multiple LLID indexes

corresponding to the extracted LLIDs, to perform control and management, a MAC

control sublayer processing unit which contains information of the multiple LLID

indexes, and performs MAC control on each LLID index, a PON bridge sublayer

processing unit which performs a bridge function of the Ethernet PON and tag

management of the Ethernet PON, and an Emulated -MAC sublayer processing unit

which performs upstream and downstream Ethernet data frame matching, FCS error

checking, and PAUSE frame processing.

Claim 6 is allowable over the prior art of record since the cited reference taken

individually or in combination fails to particularly disclose generating an Ethernet data

frame which includes LLID information written on a 8-bit preamble header, generating

an enable signal for distinguishing the 8-bit preamble area, and extracting the LLID

information separately using the enable signal, converting the extracted LLID

information into format of an interface used in the Emulation sublayer, and transferring

resultant LLID information to a MAC control sublayer, where in transferring the LLID

information to the MAC control sublayer, if the Ethernet data frame is to be transmitted

to an MPCP function unit, the Ethernet data frame is transferred without FCS, and if the

Ethernet data frame is to be transmitted to a PON bridge, the Ethernet data frame is

transferred with FCS if no error is found after performing FCS error checking.

Claim 9 is allowable over the prior art of record since the cited reference taken

individually or in combination fails to particularly disclose receiving an Ethernet frame,

determining whether the received Ethernet frame is data transferred from an MPCP

function unit, if it is determined that the Ethernet frame is data transferred from the

MPCP function unit, performing cyclic redundancy check (CRC) to add an frame check

sequence (FCS) value to the Ethernet frame, inserting an inter frame gap (IFG) into the

Ethernet frame, and extracting LLID from the Ethernet frame, whereas if it is determined

that the Ethernet frame is data transferred from a PON bridge sublayer, inserting an IFG

into the Ethernet frame and extracting LLID from the Ethernet frame without performing

the CRC, and if it is determined that the Ethernet frame is not data transferred from the

MPCP function, generating a new FCS value, including the FCS value in the Ethernet

frame, and including an LLID value for the Ethernet frame at a preamble interval thereof

to thereby output a resultant Ethernet frame.

Claim 11 is allowable over the prior art of record since the cited reference taken

individually or in combination fails to particularly disclose an Ethernet frame, performing

FCS error check of the received Ethernet frame, if any error is found in performing the

FCS error check, discarding the current Ethernet frame and storing information indicating

that the current Ethernet frame has been discarded, in a register corresponding to an

LLID of the Ethernet frame, and if no error is found, extracting a destination address

(DA) of the current Ethernet frame, and determining whether the extracted DA is an

exact address (one among addresses allocated to the MAC sublayer), if it is determined

that the extracted DA is the exact address, outputting the Ethernet frame including an

LLID and without an FCS value to an MPCP function unit, and if it is determined that the

extracted DA is not the exact address, determining whether the extracted DA is a link

specific address, if it is determined that the extracted DA is the link specific address, outputting the Ethernet frame, including the LLID and without the FCS value to the MPCP function unit, and if the DA is not the link specific address, determining whether the DA is a broadcasting address, and if it is determined that the extracted DA is the broadcasting address, simultaneously outputting the Ethernet frame, including both the FCS value and LLID, to both the MPCP function unit and the PON bridge sublayer, and if the DA is not the broadcasting address, outputting the Ethernet frame, including both the FCS value and LLID, to the PON bridge sublayer.

Conclusion

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

hc

Hong Cho
Patent Examiner
5/12/07

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